

Rejection Under 35 U.S.C. 102(b)

Claims 1, 2, 5, and 47 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada (US 5,404,025).

The Yamada reference relates to a semiconductor vacuum device including a semiconductor substrate, an insulator film, and a single crystal semiconductor film formed on the insulator film.

The rejections are traversed as follows.

Claim 1

Claim 1 relates to a method of coating a substrate with a cathode material “for an electrochemical cell.” The claim recites a step of coating a cathode material onto the substrate. The “cathode” material is necessarily a cathode of an electrochemical cell. The cathode material of an electrochemical cell is distinct from the cathode material of the Yamada reference.

The Yamada reference, e.g., at figure 6 (cited in the Office action) shows a cathode 6 and an “insulator film 53.” See also the Yamada disclosure at column 7, lines 41-64. The film 53 can include a fluorescent material so electrons emitted from the cathode 6 accelerate in the insulator film 53 and collide with the fluorescent material 51. Thus, the Yamada reference relates to a specific type of microelectronic device that is not an electrochemical cell. The cathode material is not a cathode material of an electrochemical cell, as required by the present claims, and the Yamada reference fails to identically show every feature of claim 1, including a cathode material of an electrochemical cell. The cited reference therefore fails to anticipate claim 1, and the rejection of claim 1 as anticipated by the Yamada reference should be withdrawn.

Claim 2

Claim 2 is dependent on claim 1.

Claim 2 is not anticipated by Yamada for the reasons stated with respect to claim 1, above.

Claim 5

Claim 5 is dependent on claim 1. The rejection of claim 5 is traversed for the reasons stated above with respect to claim 1.

In addition, the rejection of claim 5 is traversed because claim 5 features a method by which edge material acts as a boundary against which cathode material forms an edge. A method that includes this feature is not identically shown by the Yamada reference.

Specifically, claim 5 features a method of coating a substrate with a cathode material, wherein edge material acts as a physical boundary against which cathode material forms an edge. According to the featured language of the claimed method, “as the cathode material forms an edge,” the edge of the cathode material “forms” or is “formed” against a physical boundary provided by the edge material.

A method including these features of claim 5 is not shown to be anticipated by the Yamada reference. While the Office action points to the structure shown in figure 6, the Office action does not address the method of the formation of the figure 6 device, as the method relates to claim 5. Thus, the Office action fails to establish that the figure 6 device is prepared by the claimed method, wherein “edge material acts as a physical boundary against which cathode material forms an edge.”

Referring to the structure of Yamada’s figure 6, insulating layer 53, is described as an “extremely thin insulating layer 53.” See column 7, lines 44-45. It is not apparent from the Office action, or the cited reference, how the “extremely thin insulating layer” (considered an “edge material” according to the Office action) is used in a method of preparing the structure, to act as a boundary against which cathode material forms an edge. The Office action states at page 3:

with respect to Claim 5, Figure 6 of Yamada shows that the edge material can be interpreted to represent a physical boundary to a tapered edge of the cathode material.

Whether or not this is so, the proposed description of the structure of figure 6 does not fully represent the recited features of the method of claim 5, and therefore is not sufficient basis for rejection. The rejection fails to address that, according to the claimed method, when the edge of the cathode material is formed (i.e., during coating), the edge of the coating material forms (i.e., is formed) against the edge material. Because a

method having these features of claim 5 is not identically shown, i.e., anticipated by, the Yamada reference, the rejection of claim 5 as anticipated by Yamada should be withdrawn.

Claim 47

Claim 47, like claim 1, recites a cathode material for an electrochemical cell.

Claim 47 is not anticipated by Yamada because the cathode of the Yamada reference is not part of an electrochemical cell. All limitations of claim 47 are therefore not met by the cited reference and the rejection of claim 47 as anticipated should be withdrawn.

Rejection Under 35 U.S.C. 103(a)

Claims 4, 10, 17, 21, 22, 36, 39-41, 43, 48, and 49

Claims 4, 10, 17, 21, 22, 36, 39-41, 43, 48, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada in view of Milbourn et al. (EP 0 610 255).

The rejections are traversed. The two cited references relate to distinct technical subject matter and cannot in any way be combined to arrive at the methods of the claimed subject matter.

The Yamada reference, according to its Abstract, relates to devices described as "semiconductor vacuum device[s]" including a semiconductor substrate, an insulator film formed on the semiconductor substrate, and a single crystal semiconductor film formed on the insulator film. The method of preparing the device is described, e.g., at column 5, lines 32-66. The method involves techniques and steps that might often be considered to be useful with processing microelectronic devices on semiconductor substrates, including a CVD (chemical vapor deposition) step; selective removal by masking and etching, e.g., anisotropic etching; and reactive ion etching (RIE). The devices are prepared by these identified techniques, as would be typical for such microelectronic devices prepared from materials including a semiconductor substrate and a single crystal semiconductor film.

According to the Office action, Yamada is said to disclose all of the features of the claimed invention, but does not teach or fairly suggest the use of a slotted die coater.

The Milbourn et al. reference is said to remedy this shortcoming of the Yamada reference by describing a die coater for applying discrete coating patches. The asserted rejection of Applicants' claims 4, 10, 17, 21, 22, 36, 39-41, 43, 48, and 49, however, is untenable, because the claimed subject matter is not suggested by the combined references, and furthermore, because the cited references cannot even be combined to arrive at the claimed subject matter.

Applicants' claims 4, 10, 17, 21, 22, 36, 39-41, 43, 48, and 49, all recite the use of a slotted die coater or extrusion coating. The rejection of Applicants' methods claims that relate specifically to the use of die coaters or extrusion coating, over the combination of Yamada and Milborn et al., fails. The two references recite irreconcilably different technical subject matter in the form of entirely different processing methods used to prepare entirely different product constructions. The Yamada reference uses techniques that do not involve a slotted die coater to produce a semiconductor vacuum device. The Milbourn et al. reference uses a slotted (extrusion) die coater to produce non-semiconductor devices. Contrary to the Office action, the different methods used in the two cited references to produce the distinct device constructions, are not interchangeable. Specifically, it is not feasible to simply replace the semiconductor processing methods of Yamada (as asserted in the Office action) with the coating methods of Milbourn et al., to produce the Yamada semiconductor device by slotted die or extrusion coating. Therefore, the rejection fails.

Consider the following statement of the Office action used to support the rejection of claims 4, 10, 17, 21, 22, 36, 39-41, 43, 48, and 49:

[I]t would have been obvious . . . to incorporate a slotted die coater, as taught by Milbourn, into the invention of Yamada.

This statement is not in any remote sense supported by the cited references. Neither of the cited references themselves suggests that a slotted die coater could be used to produce a semiconductor vacuum device as described by Yamada. To the contrary, the Yamada reference uses other techniques to produce its semiconductor vacuum device, and the Milbourn et al. reference uses a slotted die coater to produce non-semiconductor devices. Contrary to the conclusion of the Office action, there is simply no suggestion in

either reference that indicates that the slotted die coater of Milbourn et al. could be used to produce a device as shown in Yamada.

Furthermore, contrary to the implication of the Office action, it would not even be feasible to use a slotted die coater to produce the device of Yamada. Thus, again, the rejection fails and should be withdrawn.

Claims 52-55

Claims 52-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada in view of Menon et al. (US 5,894,656).

The rejection is traversed. Again, the two cited references relate to distinct technical subject matter and cannot in any way be combined to arrive at the claimed subject matter. Here, Yamada relates to semiconductor vacuum devices, while the Menon et al. reference relates to electrochemical cells. Contrary to the analysis offered by the Office action, the separate components of the Menon et al. reference cannot be merely identified to exist in the Menon et al. reference and therefore added to the Yamada semiconductor vacuum device, as a matter of obviousness.

Claims 52-55 relate to a battery component that includes an anode, separator, cathode, edge material, and current collector.

The Yamada reference relates to a semiconductor device that is not described as a battery, but as a semiconductor vacuum device. The Yamada device includes two terminals ("cathode" and "anode") between which electrons flow, and a third terminal ("gate"). A fluorescent material may be placed between the anode and cathode terminals so the fluorescent material is excited by the flow of electrons (see column 2, line 67 through column 3, line 7) between the cathode and anode.

According to the Office action:

Yamada discloses all of the limitations Yamada fails to teach or fairly suggest, however, a separator interposed between an anode and a cathode as well as a current collector that contacts the cathode surface.

The Office action therefore points to the Menon et al. discussion relating to electrochemical cells, to conclude that it would have been obvious to use components of the Menon et al. reference to remedy the shortcomings of Yamada.

In essence, the Office action asserts that because separator and current collectors are used in electrochemical cells, it would have been obvious to include a separator and a current collector in the Yamada semiconductor vacuum device. The rejection is tantamount to a conclusion that it would have been obvious to modify the semiconductor vacuum device of Yamada, by changing it into an electrochemical cell. The patent law, however, does not allow obviousness rejections that are based on merely picking and choosing prior art elements from disparate references and combining them in the absence of a prior art suggestion. The patent law also does not permit a rejection based on obviousness if the rejection would frustrate the purpose of a cited reference. Here, the rejection is not based on any suggestion in the prior art, and would frustrate the purpose of at least the Yamada reference, which does not describe an electrochemical cell and does not suggest that its device could be modified to function as an electrochemical cell.

Simply put, the Office action provides no support for the stated rejection of claims 52-55. The Yamada reference relates to a semiconductor vacuum device that is not an electrochemical cell, and that does not include, e.g., a separator or a current collector. The Menon et al. reference may relate to electrochemical cells, but these are completely different devices from the Yamada semiconductor vacuum device, and the components of the two different types of devices are not interchangeable. Overall, there is no support for the conclusion that one of skill would have modified the Yamada semiconductor vacuum device to produce an electrochemical cell, based on the discussion by Menon et al. Quite to the contrary, such a modification would potentially frustrate the purpose of the Yamada reference by introducing components that are not required for the function of the Yamada device. The rejection of claims 52-55, therefore, as obvious over Yamada in view of Menon et al., should be withdrawn.

Allowable Subject Matter

Applicants acknowledge with appreciation the Examiner's indication that claims 25-35 are allowed and that claims 3, 6-9, 11-16, 18-20, 23, 24, 37, 38, 42, 44-46, 50, 51, and 56 would be allowable if rewritten in independent form.

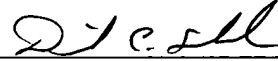
Because all of the pending claims are believed by Applicants to be allowable, as discussed in the comments above, the claims have not been amended with this Response.

Conclusion

The Examiner is invited to contact the undersigned, at the Examiner's convenience, should the Examiner have any questions regarding this communication or the present patent application.

Respectfully Submitted,

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